Xvision™

CCTV

How to

Set up a POS Surveillance System using XDVR2POSM/M2

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XDVR2POSM/M2
User Guide

Introduction

Integrated POS surveillance system comprises several components mainly including point-of-sales, cameras and digital video recorders which are capable of recording transaction data. It provides retail managers and shop or company owner with a complete picture of trade activity and also enables emphasizing of suspected or questionable event such as "Sweet hearting discounts" and flagged transactions including "Voids", "No Sales"and reducing the time spent on reviewing recorded video. With security being the top of mind for retailers, text overlay of transaction data onto POS surveillance video is quickly becoming the application of choice for fraud-conscious merchants.

TRADITIONAL SECURITY MONITORING VS. POS SURVEILLANCE SYSTEM

Traditional (CCTV) Security Monitoring	POS Surveillance System
On Point-of-sale side: - Find out the suspicious transactions - Get the time of targeted transaction On surveillance system side: - Search the video by the time - Check the recorded video with transaction data	On surveillance system side: - Find out the suspicious transactions with the time - Check the recorded video with transaction data - Remote accessibility via Internet

WHO CAN BE BENEFIT FROM POS SURVEILLANCE SYSTEM?

Small family-owned stores to retail chain-stores rely on POS Surveillance System as added security to help reduce the potential for damage, theft and fraud. The use of POS Surveillance can also aid in tracking cash transaction to capture fraudulent activities, not only video image but also transaction data, that occur frequently in the retail environment.

Benefits

- Reduction of losses at shopping centers:incontrovertible proofs of trade violation (false discount cards, misappropriation of profit, fictitious return of products, imposition of clients, etc.)
- Enhanced quality of services: managers possess full information on personnel's actions, which greatly improves labor discipline. Network features of the system allow to receive information in minutes, even not leaving office
- Registration of all purchases with indication of date, attachment of video record of both salesman and client
- Centralized control of POS network over a trade outlet operations from any point of the world via Central Management System
- Operative real-time management
- Powerful analysis toolset: basic and extended requests, search of specified events.

Features

- Data synchronization: every sales check's text information applies to video image
- Video Text Overlay: Transaction text message can be displayed on screen and on the video files. You may also choose to hide the data from the screen view.
- Exception text:you can predefined 16 set exception event text. For example, all the transactions containing the keyword "VOID" will be marked.
- Quick search: you can search the data by product name, price and by channel. Besides, you can also use the combination of words on the search function.
- Remote control: Remote playback and text overlay allow you to know about your business even you are thousands of miles far from your store.

Devices required for POS Surveillance System

A POS surveillance system is mainly composed of the devices listed as follows:

- Dome/Fixed Camera
- DVR
- POS/Cash Register
- Receipt Printer/Pole Display (optional)
- Data Converter (optional)

An illustration of POS surveillance system wiring will be shown in the later section: System Connectivity (with RS232 DB9 Y-cable).

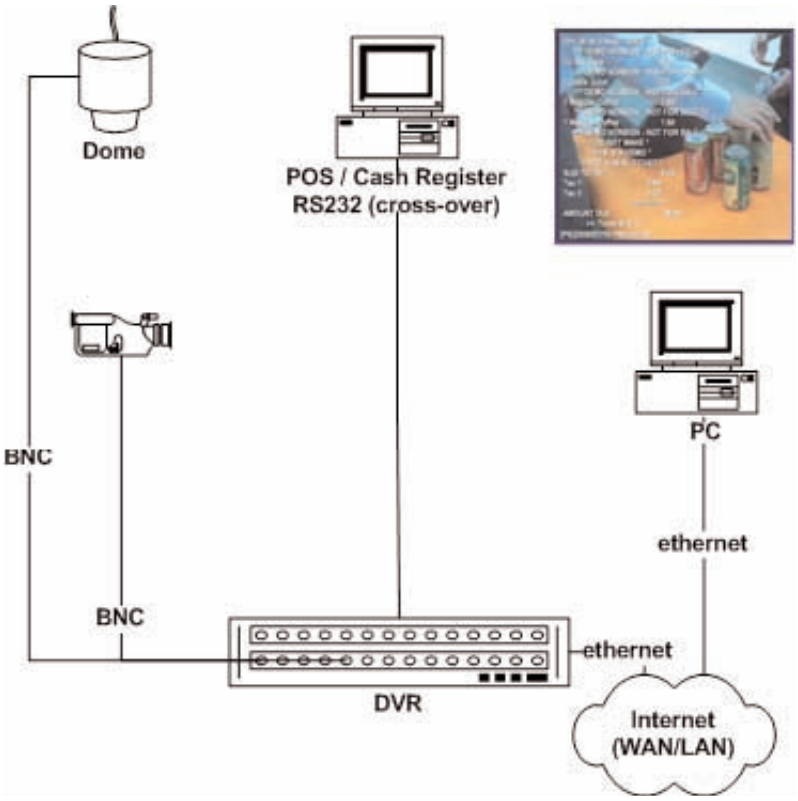
Supported Models

Pole displays/printers that follow the protocols such as EPSON (ESC/POS), PaernerTech, UTC,AEDEX etc. should work fine. For details of various models support, refer to Appendix C: List of Supported Models.

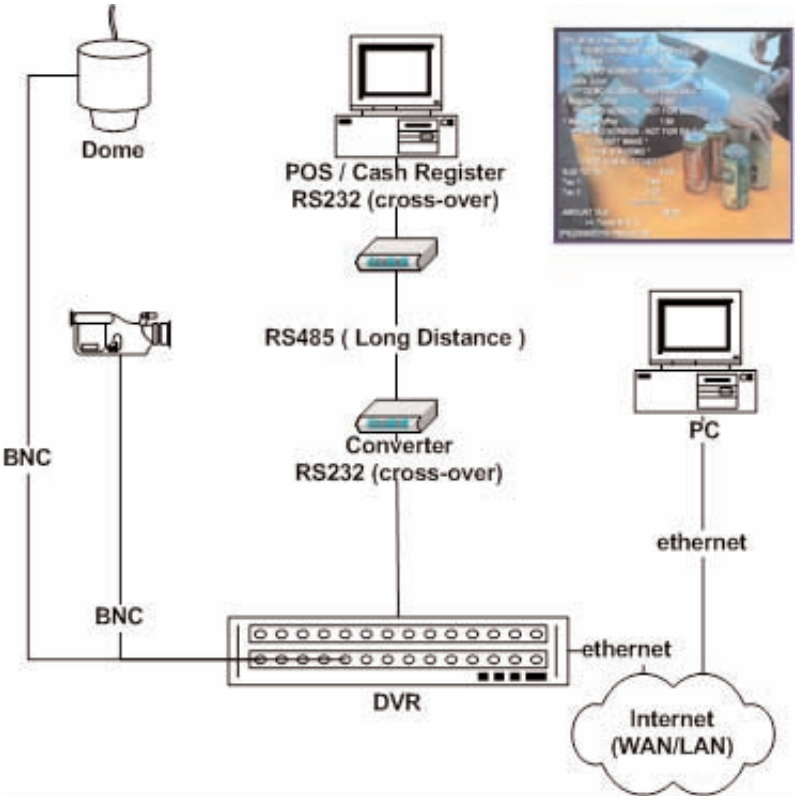
***Data Converter
The Data Converter is for text data collecting and transmitting to a single DVR in a POS surveillance system with more than one cash register, especially in the system of large scale such as hypermarkets.

Integrated System Configuration

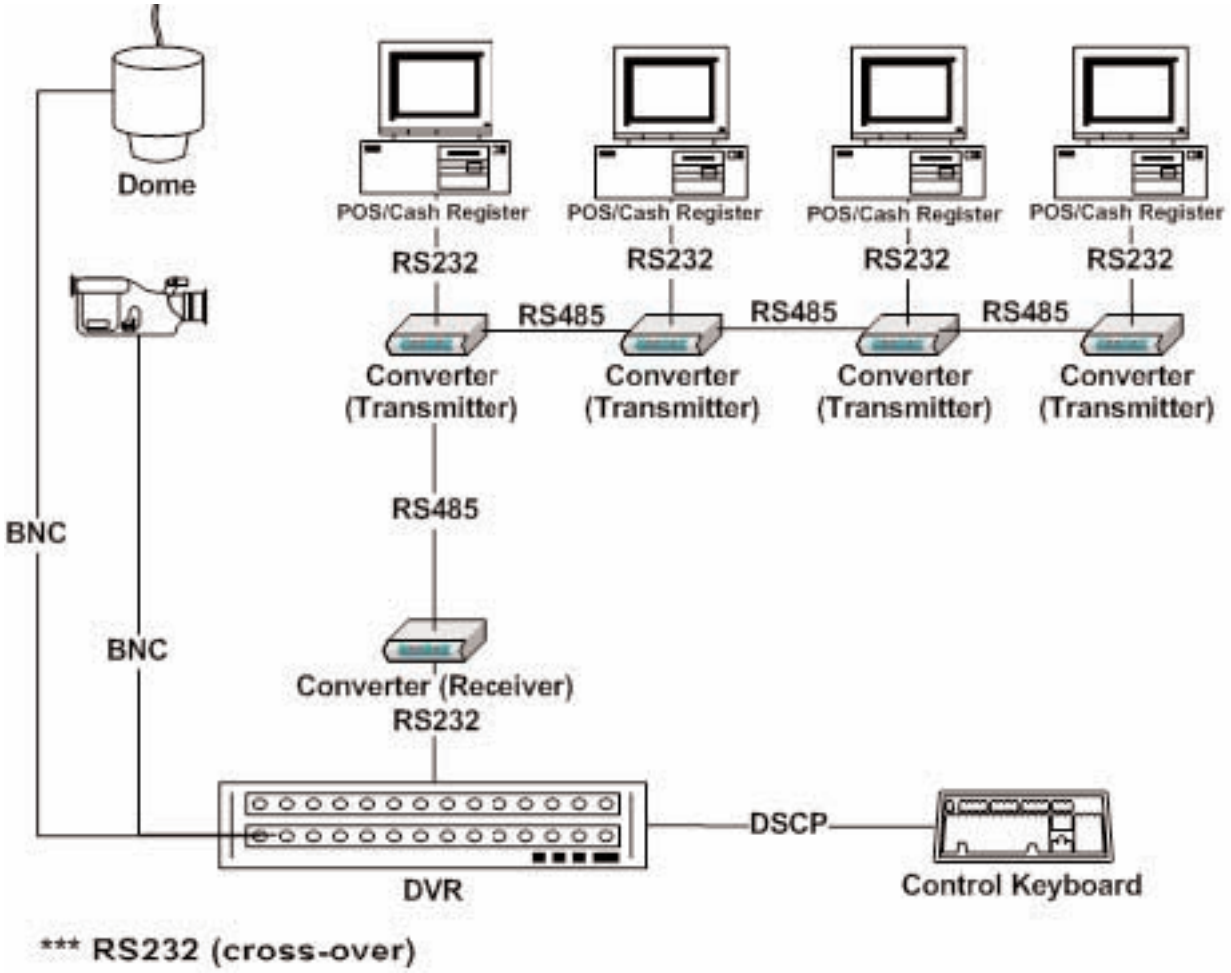
SINGLE POS—DIRECT CONNECTION



SINGLE POS—LONG DISTANCE (UP TO 1 KM)



MULTI-POS SURVEILLANCE

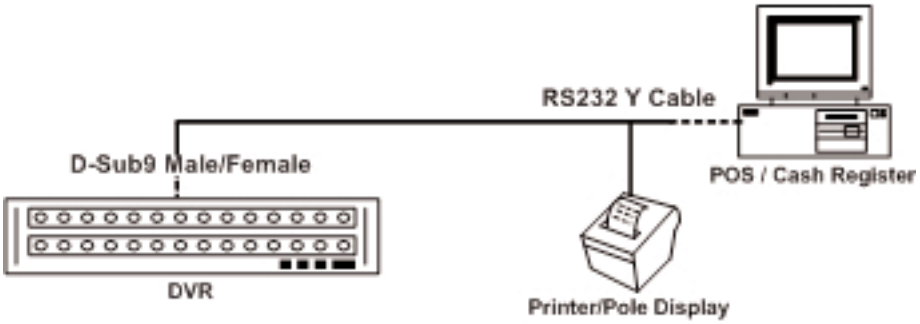


System Connectivity (with RS232 DB9 Y Cable)

The RS232 DB9 Y Cable (see the figure below)is available in both Text Module and Data Converter packages for easy wiring. Please refer to the Y Cable's figure below for each connector's use. Also refer to the following diagrams for single / multi- POS connection with the Y Cable.

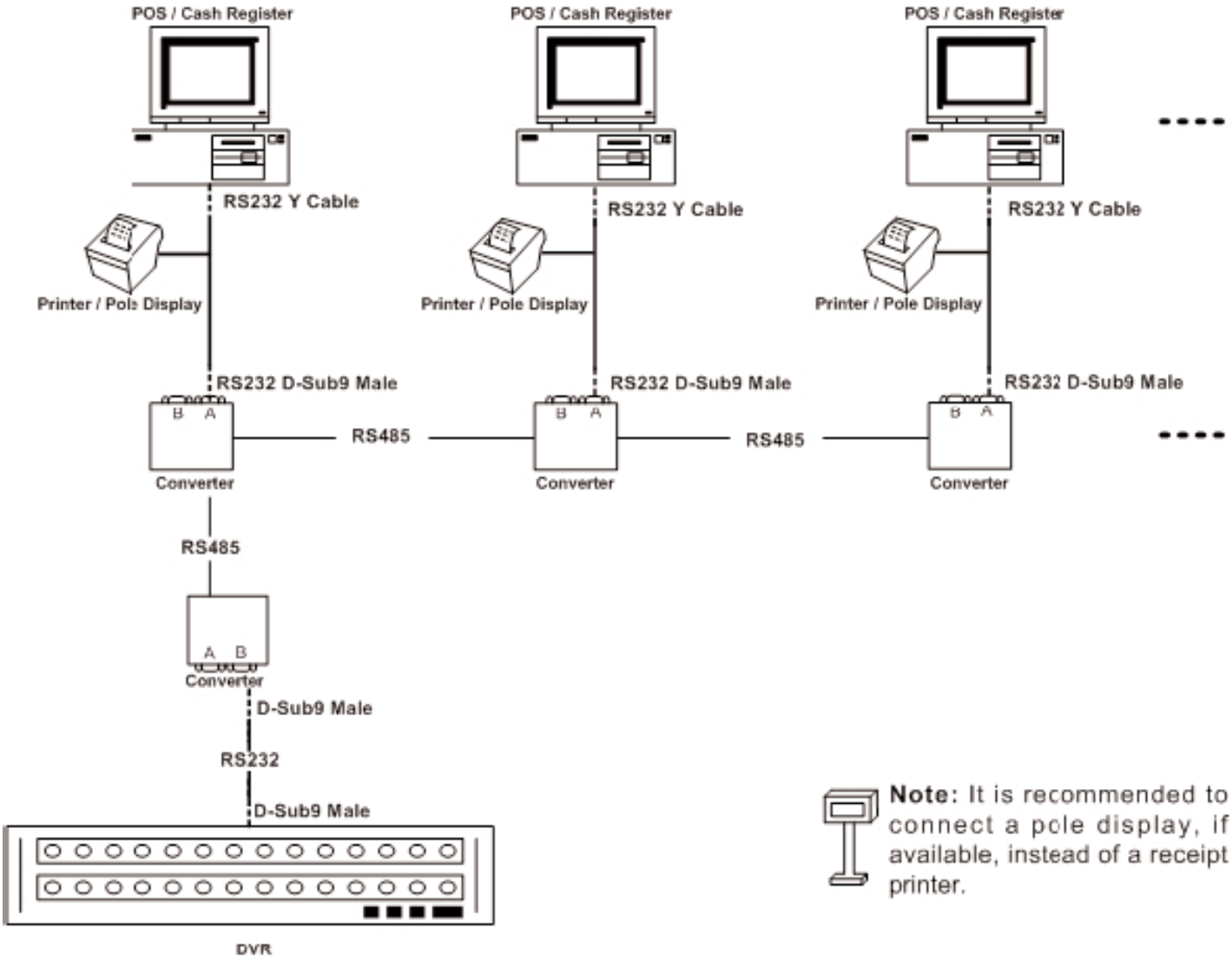
Use of RS232 DB9 Y Cable Connectors:

SINGLE POS CONNECTION VIA THE DB9 Y CABLE



Note: It is recommended to connect a pole display, if available, instead of a receipt printer.

MULTI-POS CONNECTION VIA DB9 Y CABLES



Note: It is recommended to connect a pole display, if available, instead of a receipt printer.

SET UP OF CONNECTED DEVICES

Text Module Installation

Before attaching the Text Module to the DVR, please check if the Text Module package contains the items listed below.

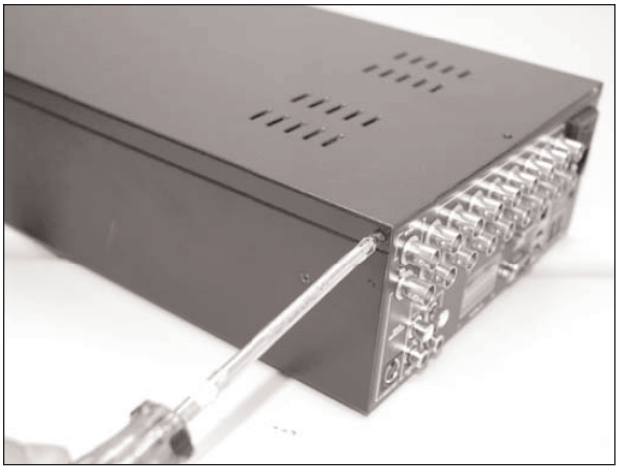
Main Board Text Module:

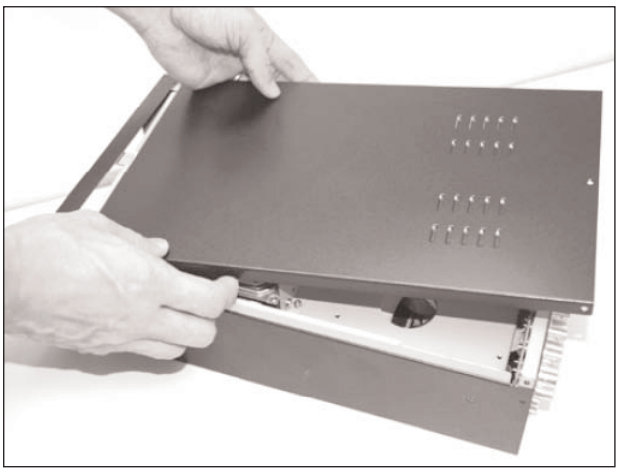
1. Text Module x1
2. USB Cable x1
3. Screws x4
4. Y-cable x1

FOLLOW THE STEPS BELOW TO INSTALL THE TEXT MODULE.

STEP 1

Unscrew the DVR's cover plate removing screws from the top and side of the lid and remove it from the unit, as shown in the images.



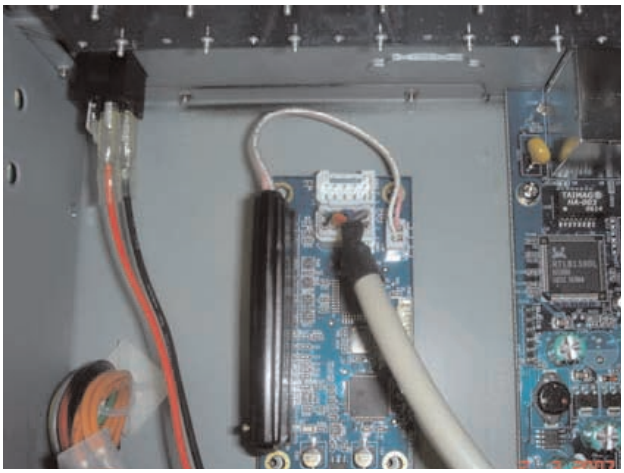


Refer to the figures below for the designation of each connector on the Main Board and Text Module.

STEP 2

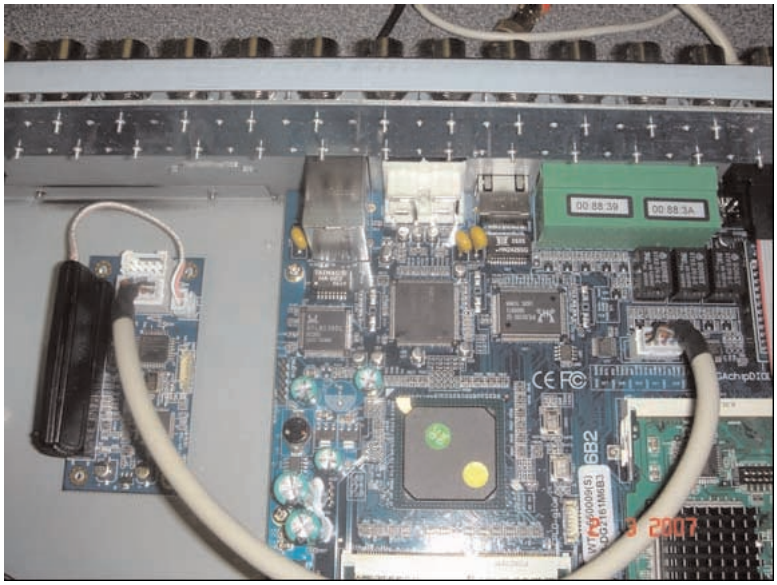
Fasten the Text Module on the location, which is marked as a frame in the right figure. Then connect USB from Socket A (on the Main Board as shown on left) and connect it to Socket B (on the Text Module), as shown on right.

Figure: USB Connector A in Socket B in text module



STEP 3

Once connected secure down as shown below.



Reverse the steps 1 and 2 to assemble the DVR's partition and the cover.

OSD Setup (Local/Remote)

After completing Text Module installation, please carry on the DVR's OSD setup for activating the text function. To setup the Text Overlay function, enter the OSD setup menu with the correct administrator password, and then select "Text Setup".

Main Menu
1. System Setup
2. Monitor Setup
3. Camera Setup
4. Record Setup
5. Sequence Setup
6. Event Setup
7. Database Setup
8. Configuration
9. Video Export
10. Text Setup
11. Shutdown

Four items: Text Function, Text Overlay, Exception Text Setup and Input Setup, are found in the sub-menu of "Text Setup." Details of each item are described in the following sections.

The column below shows the Text Setup menu.

Text Setup	
1. Text Function	ON
2. Text Overlay	LIVE & PB
3. Exception Text Setup	
4. Input Setup	

TEXT FUNCTION

When selecting "ON", transaction data will be saved in text database.

NOTE: Once the Text Function is set "ON," remember to assign a port for the POS/cash register or modem under the item 4.Input Setup > Port Selection. Further details will be described later.

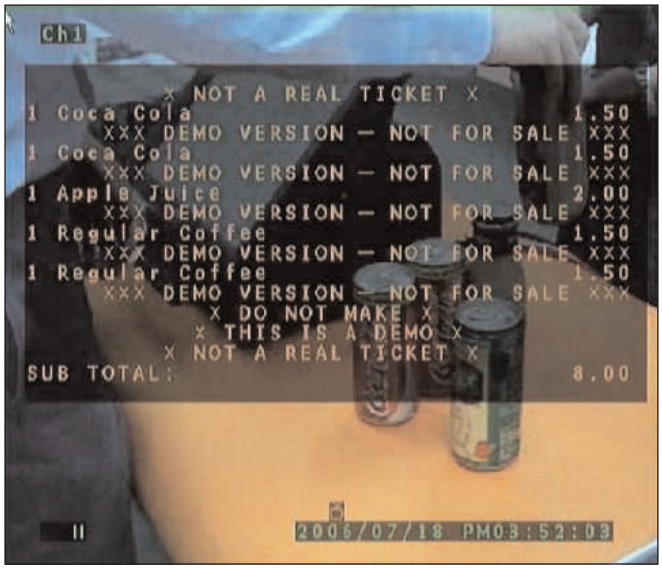
TEXT OVERLAY

You can decide to see text overlay in LIVE mode, PB mode or both.

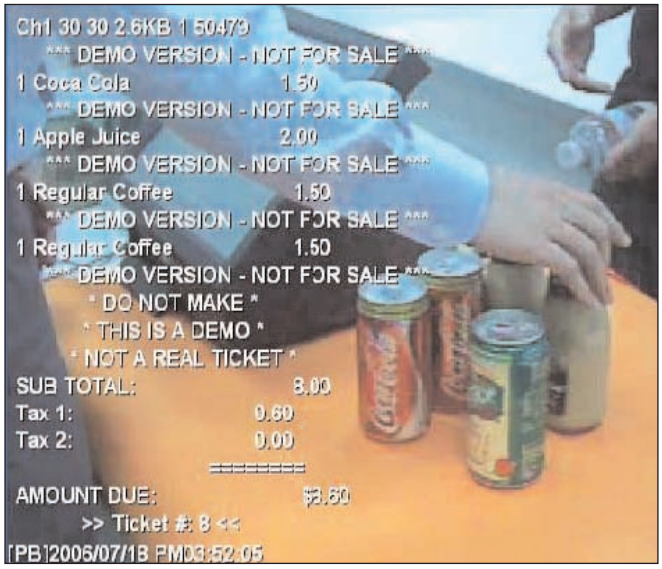
- Available options - OFF, Only Live, Only PB, Live/PB
- Max lines displayed on OSD : 15 lines
- 42 bytes per line
- Text will be blanked out if no more data input in 8 seconds.
- Line compress feature - When data length in one line exceeds the limit, the DVR will try to eliminate some continuous space to fit the line length limitation. Thus the text format on screen might differ slightly from print-out.
- Supports only English & West European characters so far.
- Text Overlay only displays in full screen mode.
- PB overlay is only available when PB speed is 1x forward.

NOTE:
Remote Live— Text Overlay must be active for LIVE;
Remote PB— Text Overlay must be active for PB.

Furthermore, when seeing in Remote LIVE and Remote PB, it is possible to lose text data in low bandwidth network. We recommend using Remote Archive function to archive complete video and use "Local Playback of DVR Remote", "DVR Player" & CMS to playback DRV file.


Ch1
X NOT A REAL TICKET X
1 Coca Cola 1.50
XXX DEMO VERSION - NOT FOR SALE XXX
1 Coca Cola 1.50
XXX DEMO VERSION - NOT FOR SALE XXX
1 Apple Juice 2.00
XXX DEMO VERSION - NOT FOR SALE XXX
1 Regular Coffee 1.50
XXX DEMO VERSION - NOT FOR SALE XXX
1 Regular Coffee 1.50
XXX DEMO VERSION - NOT FOR SALE XXX
X DO NOT MAKE X
X THIS IS A DEMO X
X NOT A REAL TICKET X
SUB TOTAL: 8.00
2006/07/18 PM03:52:03

LIVE


Ch1 30 30 2.6KB 1 50479
*** DEMO VERSION - NOT FOR SALE ***
1 Coca Cola 1.50
*** DEMO VERSION - NOT FOR SALE ***
1 Apple Juice 2.00
*** DEMO VERSION - NOT FOR SALE ***
1 Regular Coffee 1.50
*** DEMO VERSION - NOT FOR SALE ***
1 Regular Coffee 1.50
*** DEMO VERSION - NOT FOR SALE ***
* DO NOT MAKE *
* THIS IS A DEMO *
* NOT A REAL TICKET *
SUB TOTAL: 8.00
Tax 1: 0.60
Tax 2: 0.00
AMOUNT DUE: $8.60
>> Ticket #: 8 <<
[PB]2006/07/18 PM03:52:05

PLAYBACK

EXCEPTION TEXT SETUP

The submenu of the item: Exception Text Setup is shown below.

Except Text Setup	
Exception No.	1
Trigger OFF	Exception
String	NO SALE
By Numerals	OFF
Value	
Value (Upper Limit)	

EXCEPTION NUMBER
16 sets available

TRIGGER

When turned "ON", those transactions containing "Exception Strings" and meeting "Numerals" conditions will be marked as exceptions in text database and then trigger preset actions such as alarm output, alarm message via e-mail, SMS, etc. Exceptions can also be quickly searched via Text Query in Search menu.

EXCEPTION STRING

Define Exception String. Max length: 24 bytes. The "Exception String" is case-sensitive. Only exactly matched ones will be marked as exceptions.

BY NUMERALS AVAILABLE OPTIONS

- OFF
- Specific
- Greater Equal Than
- Less Equal Than
- Inside The Range
- Outside The Range

"Exception String" must be defined first before "By Numerals" takes effect. If "By Numerals" is enabled, only transactions that meet both "Exception String" and "By Numerals" conditions will be marked as exceptions and trigger an action.

NOTE: Only when Trigger is ON that the transactions will be marked as exceptions in text database. Otherwise, the stored data won't be marked as exceptions.

INPUT SETUP

Input Source Select whether the input source is direct connected or connected with the Data Converter. If the input source is direct connected, users may need to go to the next item: **Camera Selection** to select a corresponding camera number

Input Setup submenu is shown below:

Input Setup	
1. Port Selection	Serial Port
2. Input Source	Direct Connected
3. Camera Selection	1
4. Text Filter	ASCII
5. Manual Filter Setup	
6. Text Baud Rate	9600
7. Text Bits	8
8. Text Stop	1
9. Text Parity	NONE

CAMERA SELECTION

16 camera numbers can be selected

PORT SELECTION

It is essential to select a port for either the POS/cash register or modem when the text function is set on. Meanwhile, also check whether the device is connected to the port selected.

Port Selection	
1. Serial Port	Text
2. USB Port-Front	NONE
3. USB Port-Rear Top	NONE
4. USB Port-Rear Bottom	NONE

TEXT FILTER

Text Filter is for filtering control codes out, so that the transactions data read easily. Available options under the item include ASCII, Manual, EPSON (ESC/POS), PartnerTech, etc. For details of supported models of printers/pole displays, please refer to Appendix C: List of Supported Models. The ASCII table is also provided in Appendix D for reference.

If cannot find support protocol among the options, please select "Manual" and go to next item to carry on hexadecimal digits input.

MANUAL FILTER SETUP

Once enter the Manual Filter Setup menu, users should key in hexadecimal digits.

The menu of the item is shown as follows.

Manual Filter Setup	
1. Header 1	30
2. Header 2	30

TEXT BAUD RATE, TEXT BITS, TEXT STOP & TEXT PARITY

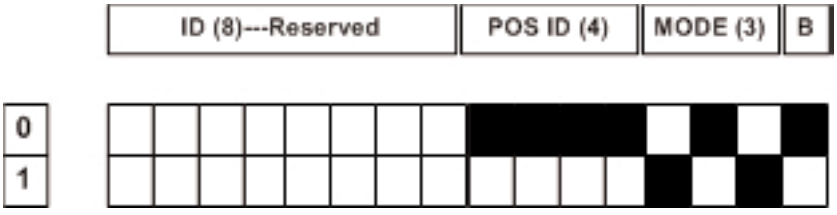
The default settings for these items are listed below:

- Text Baud Rate: 9600
- Text Bits: 8
- Text Stop: 1
- Text Parity: None

Data Converter Setting

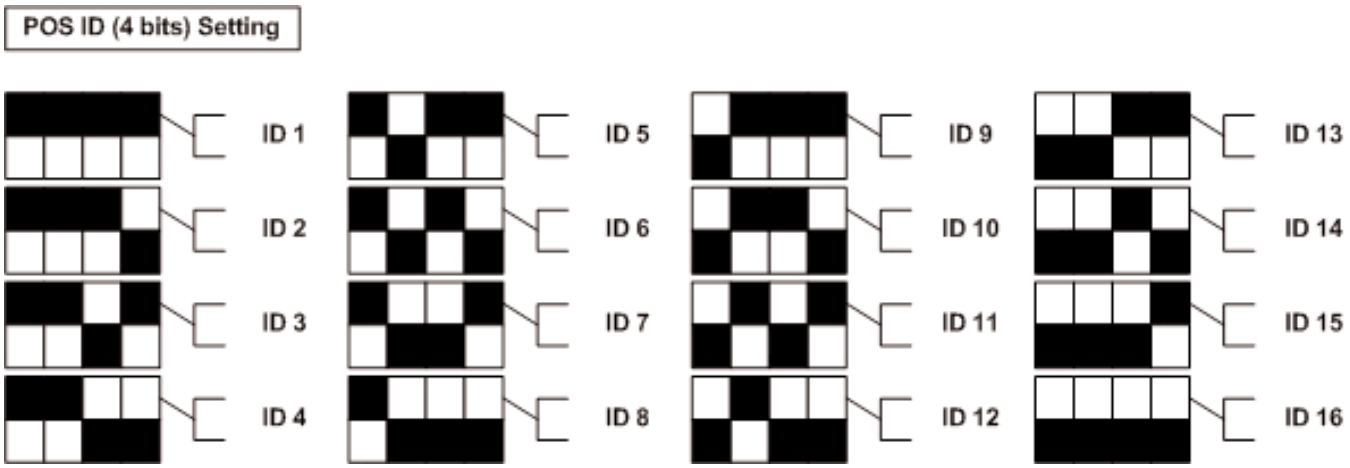
Data Converters are mainly used when users need to connect more than one cash register to a single DVR; see the multi-POS system diagrams in the previous sections. Also refer to the section: Supported Models for the description of the Data Converter.

In addition to setting up POS/cash registers, receipt printers and DVR OSD, users also need to set up Data Converters. The dip switch of the Data Converter (see the diagram below) provides various settings for POS ID, Mode and Baud Rate.



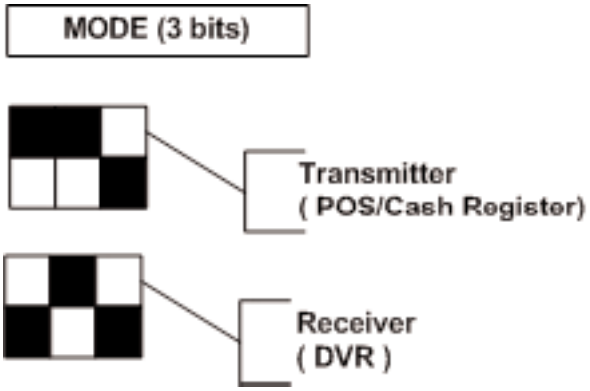
POS ID SETTING

The Data Converter's POS ID should correspond with the cash register's number, i.e. POS ID 1? Register No.1, POS ID 2? Register No.2, etc. Please refer to the table below for POS ID setting.



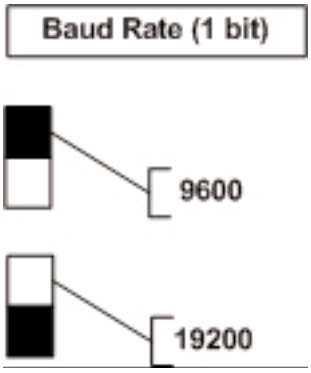
MODE SETTING

Set the mode according to whether the connected device is a transmitter or receiver. Refer to the illustration below for mode setting.



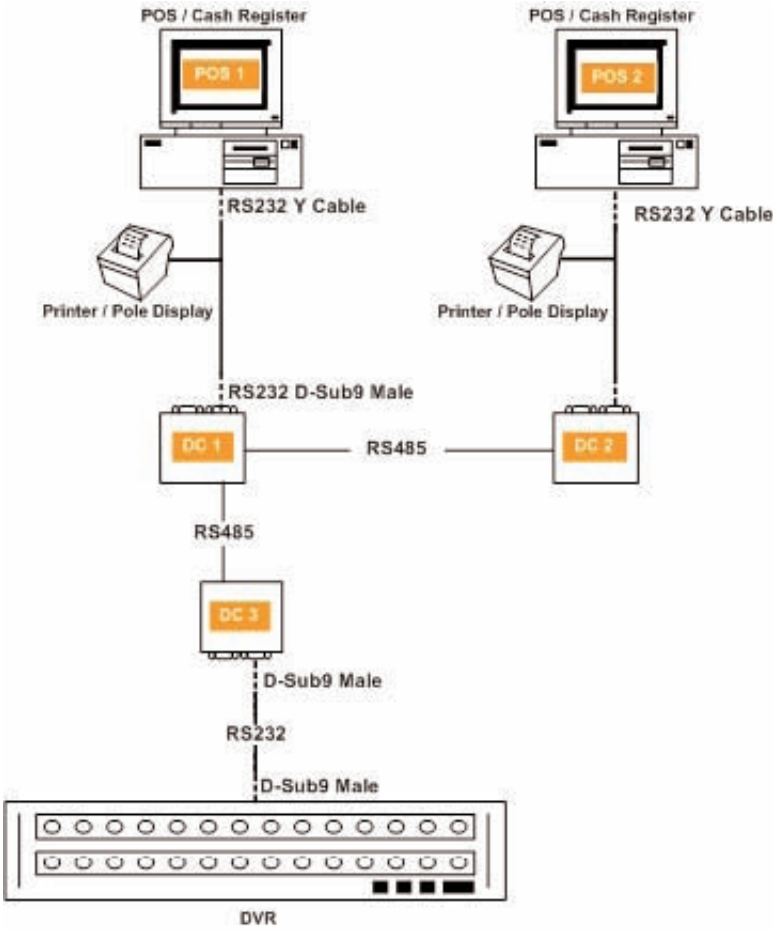
BAUD RATE SETTING

Refer to the illustration below for baud rate designation. The baud rate is subject to the connected device, i.e. POS/cash register or DVR.



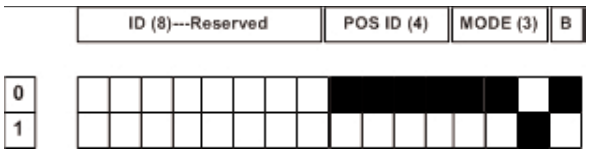
Example of Data Converter Setting

Suppose that there are two POS/ cash registers connecting to a DVR in a POS surveillance system, like the illustration below.

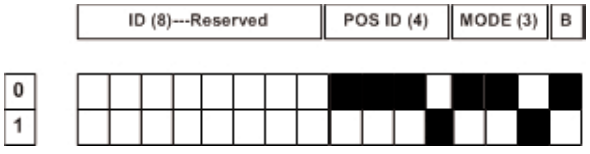


Each Data Converter's POS ID and Mode should be set as follows.

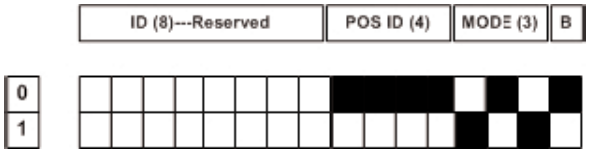
DC 1: POS ID ⟶ 1 (0000); Mode ⟶ Transmitter (001)



DC 2: POS ID ⟶ 2 (0001); Mode ⟶ Transmitter (001)



DC 3: POS ID ⟶ No Function; Mode ⟶ Receiver (101)

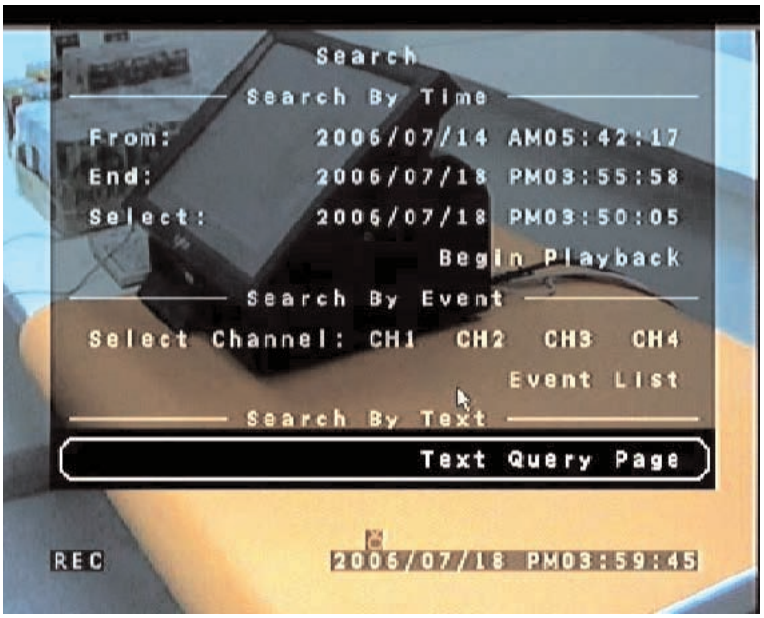


POS Cash Register Setting

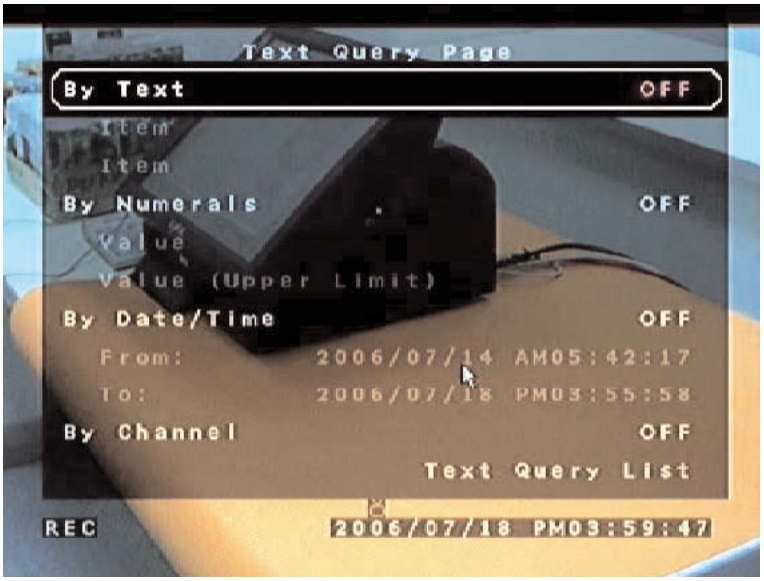
Please refer to the user manual of the POS/cash register in use for printer-related setting.

Text Operation (Local/Remote)

Users can easily investigate specific transactions data via Text Module's text search function, which can be found on the DVR's Search menu. Press the button SEARCH to enter the Search menu, as shown below. Then move the cursor to the Text Query Page under the item: Search By Text.



Users can search transactions data by four conditions: Text, Numerals, Date/Time and Channel on the Text Query Page, as shown below. "AND" operation will apply if multiple conditions are set simultaneously.



SEARCHING CONDITION

BY TEXT AVAILABLE OPTIONS

- OFF
- Specific - Transactions with the specific keyword will be found.
- AND - Transactions with the exact two keywords will be found.
- OR - Any transaction containing one of the two keywords will be found.
- Exception - All triggered exceptions will be listed.

NOTE: The search strings mentioned above are case-insensitive - this differs from "Exception String " setup (see OSD Set-up Exception Text Setup - Exception String).

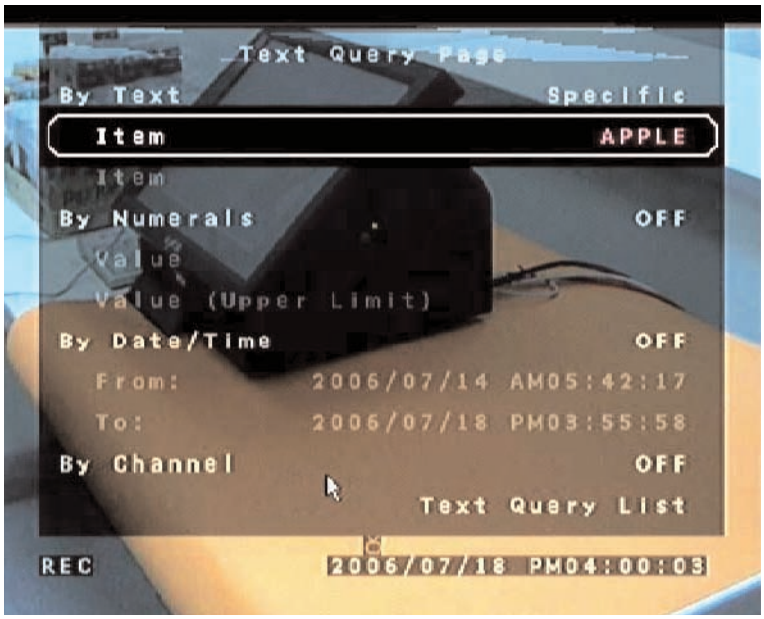
SEARCHING RESULT

After determining the research condition(s), move the cursor down to "Text Query List" and press ENTER for searching result. In the Text Query List, Date/Time, Channel and Type will be shown (like event list); see the example below.

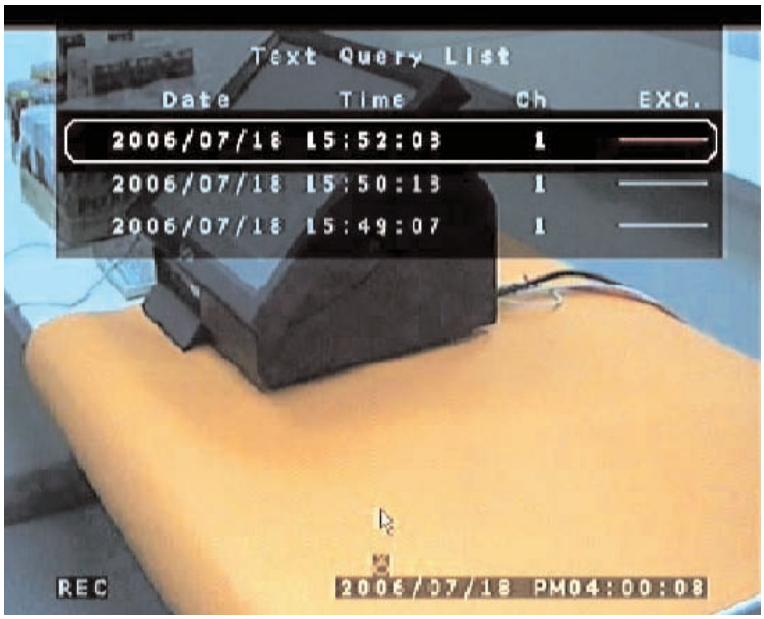
- By Value
- OFF
- Specific
- Greater Equal Than
- Less Equal Than
- Inside The Range
- Outside The Range
- By Date
- By Channel---All or a specific channel

To search for the apple string "By Text," users should select "Specific" and input "APPLE" in the Item editing page. Refer to the following figures.

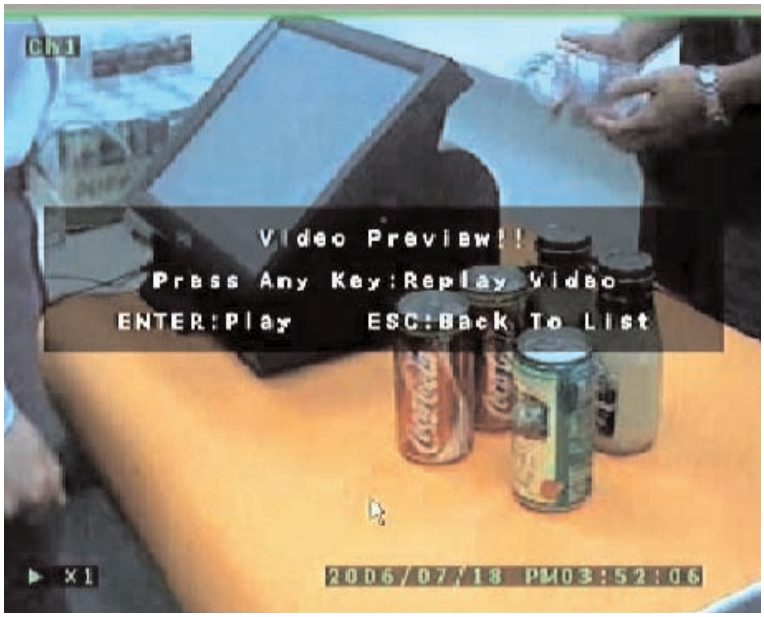
Item
APPLE
A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9 . ! @
- _
Backspace
Delete
Cancel
OK
REC
2006/07/18 PM04:00:01



Then, move the cursor down to "Text Query List" and press ENTER for searching result; see the figure below.



- EXC. is the abbreviation of Exception.
- The EXC. column will show Exception Strings if searching by "Exception."
- Strings of more than 7 bytes will be abbreviated. excluding:
  VOID → "VOID" NO SALE → → "NO SALE" BASKETBALL → → "BASK..."
- EXC. will show "-------" when searching by other criteria.



In the Text Query List, if move the cursor to a specific item (see the above figure) and press "Any Key" other than "Enter," the DVR will enter the "preview playback" mode. The mode enables quick return to the Text Query List without escaping the list page, so that saves time for calling the list. There is no text overlay in "preview playback". Press ESC to go back to the Text Query List.

If press ENTER to confirm an item, the DVR will enter into the PB mode.

Ch1
X DO NOT MAKE X
X THIS IS A DEMO X
X NOT A REAL TICKET X
1 Coca Cola 1.50
XXX DEMO VERSION - NOT FOR SALE XXX
1 Coca Cola 1.50
XXX DEMO VERSION - NOT FOR SALE XXX
1 Apple Juice 2.00
XXX DEMO VERSION - NOT FOR SALE XXX
1 Regular Coffee 1.50
XXX DEMO VERSION - NOT FOR SALE XXX
1 Regular Coffee 1.50
XXX DEMO VERSION - NOT FOR SALE XXX
X DO NOT MAKE X
▶ x1
2006/07/18 PM08:52:03

EXPORT

• AVI No text overlay support when exporting AVI format

• DRV Text overlay is only present in DRV format. Users can use "Local Playback of DVR Remote", "DVR Player" and CMS to playback DRV file.

Text overlay will show when playback DRV file is in full screen mode.

NOTE: We recommend using the "ezBurn" function to export DRV file when users have located the wanted video.

Appendix A: Pin Definition of RS232 DB9 Male

RS232-A for POS/Cash Register (Half-duplex)

Pin	Definition
1	-
2	RX
3	-
4	-
5	GND
6	-
7	-
8	-
9	-

RS232-B for DVR (Full-duplex)

Pin	Definition
1	-
2	RX
3	TX
4	-
5	GND
6	-
7	RTS
8	CTS
9	-

Appendix B: POS Menu Tree

The table below is the POS menu tree.

Item	Level 1	Level 2	Level 3
Text Setup	1.Text function	<ON><OFF>	
	2.Text overlay	<ON><OFF>	
	3.Exception Setup	1.Exception No.	<1>~<16>
		2.Trigger	<ON><OFF>
		3.Exception String	Ex: <NO SALE>,<VOID>,<CANCEL>, <RETURN>,<COUPOUND>,<DISCOUNT>
		4.By Numerals	<OFF>,<Specific>,<Greater Equal Than>, <Less Equal Than>,<Inside The Range>, <Outside The Range>
	4.Input Setup	1.Port Selection	<Text>, <NONE>,<Dial-In/Out>
		2.Input Source	<Dyna-D70DC>,<Direct Connected>
		3.Camera Select	<1> ~ <16>
		4.Text Filter	<ASCII>,<Manual>,<EPSON (ESC/POS)>, < EPSON (ESC/POS)-PD>,<PartnerTech>, <UTC>,<AEDEX>,<ADM787/788>, <DSP800>
		5.Manual Filter Setup	
		6.Text Baud Rate	<9600>,<19200>,<38400>,<57600>,<150>,
			<300>,<600>,<1200>,<2400>,<4800>
		7.Text Bits	<6>,<7>,<8>
		8.Text Stop	<1>,<2>
		9.Text Parity	<None>,<Odd>,<Even>

Appendix C: List of Supported Models

The supported models for pole display and printer are listed below.

Pole Display	Printer
Cache Technology VFD-202T	Citizen CBM-1000 II
Citizen C2202	Citizen CT-S300
Digipos CD5220	Dell T200
Emax Pole Display	Epson TM-T88II/ TM-T88III/ TM-T88IV
Epson DM-D Series	Epson TM-T90
Logic Controls LD9000	Epson TM-930 II
Logic Controls PD3000	Epson RP-U420
Logic Controls PD6000	IBM SureMark TF6
Logic Controls TD3000	IBM SureMark TM6
Magellan	Ithaca iTherm 280
Partnertech CD5220	Ithaca POSJet 1000
Posiflex ICD-2002	POS-X Xr500
Posiflex PD 302	Samsung SRP350
Posiflex PD 303	Sensor TP-288
Posiflex PD-2100	Star TSP100 futurePRNT
Posiflex PD-2200	Star TSP600
POS-X Xp8000	Star TSP700
Scales	Star TSP800
Sibnet	TPG (Axiohm) A794
STAR SCD400-PD	WP-520(ESC/POS)
Soteke VFD2025	
Soteke VFD2029	
TEC	
Toledo 8217	
TYSSO VFD Series	
Ultimate Technology PD1100XL	
Wedderburn DS-770	

Appendix D: ASCII Table

Dec	Hex	Char	Description	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	0	NUL	null	32	20	SPACE	64	40	@	96	60	`
1	1	SOH	start of heading	33	21	!	65	41	A	97	61	a
2	2	STX	start of text	34	22	"	66	42	B	98	62	b
3	3	ETX	end of text	35	23	#	67	43	C	99	63	c
4	4	EOT	end of transmission	36	24	$	68	44	D	100	64	d
5	5	ENQ	enquiry	37	25	%	69	45	E	101	65	e
6	6	ACK	acknowledge	38	26	&	70	46	F	102	66	f
7	7	BEL	bell	39	27	'	71	47	G	103	67	g
8	8	BS	backspace	40	28	(	72	48	H	104	68	h
9	9	TAB	horizontal tab	41	29	)	73	49	I	105	69	i
10	A	LF	new line	42	2A	*	74	4A	J	106	6A	j
11	B	VT	vertical tab	43	2B	+	75	4B	K	107	6B	k
12	C	FF	new page	44	2C	,	76	4C	L	108	6C	l
13	D	CR	carriage return	45	2D	-	77	4D	M	109	6D	m
14	E	SO	shift out	46	2E	.	78	4E	N	110	6E	n
15	F	SI	shift in	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	data link escape	48	30	0	80	50	P	112	70	p
17	11	DC1	device control 1	49	31	1	81	51	Q	113	71	q
18	12	DC2	device control 2	50	32	2	82	52	R	114	72	r
19	13	DC3	device control 3	51	33	3	83	53	S	115	73	s
20	14	DC4	device control 4	52	34	4	84	54	T	116	74	t
21	15	NAK	negative acknowledge	53	35	5	85	55	U	117	75	u
22	16	SYN	synchronous idle	54	36	6	86	56	V	118	76	v
23	17	ETB	end of trans. block	55	37	7	87	57	W	119	77	w
24	18	CAN	cancel	56	38	8	88	58	X	120	78	x
25	19	EM	end of medium	57	39	9	89	59	Y	121	79	y
26	1A	SUB	substitute	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	escape	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	file separator	60	3C	<	92	5C	\	124	7C	|
29	1D	GS	group separator	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	record separator	62	3E	>	94	5E	^	126	7E	~
31	1F	US	unit separator	63	3F	?	95	5F	_	127	7F	DEL